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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,480	01/28/2000	Martin A. Cheever	0140580-009810	2303

20350 7590 06/30/2004

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EXAMINER	
HOLLERAN, ANNE L	
ART UNIT	**PAPER NUMBER**
1642	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/493,480	CHEEVER ET AL.	
	Examiner	Art Unit	
	Anne Holleran	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *93,97-103 and 107-130* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *93,97-103,107-118,121,122 and 124-130* is/are rejected.

7)☒ Claim(s) *119,120 and 123* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. The amendment filed April 12, 2004 is acknowledged.

2. Claims 93, 97-103, 107-130 are pending and examined on the merits.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections Maintained:

4. The rejection of claims 93, 97-103, 107-116, 121, and 124-130 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is maintained. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The basis for this rejection is two-fold: the genus of nucleic acids encoding fusion proteins, where the fusion proteins are defined by as at least 90% identical to SEQ ID NO: 6 (claim 93) or to SEQ ID NO: 7 (claim 103) is not described in the specification, either explicitly or implicitly, and the genus of claimed fusion proteins is not described, because the structures provided are not representative of the claimed genus.

The original claims were drawn to nucleic acids encoding fusion proteins having at least 80% sequence identity to reference protein sequences. The amendment filed April 25, 2001 (Paper No. 10) fails to point to support in the specification for the claimed genus of nucleic acids. While the specification contains descriptions of hybridization conditions and definitions of conditions that correspond to various levels of stringency, nowhere in the specification is there support for a genus of nucleic acids encoding fusion proteins where the genus of nucleic acids is defined by their ability to reference sequences under the conditions recited in the claims.

The claimed inventions are also rejected under 35 U.S.C. 112, first paragraph, because the specification lacks written description of the full scope of the claimed genus; the nucleic acids encoding the exemplary fusion proteins are not representative of the claimed genus. For a genus of products to be adequately described, the specification must provide at least the structural features common to the members of the genus. This may be done by describing a representative number of species of the genus, or by providing partial structures, physical or chemical characteristics, or functional characteristics coupled with a known or disclosed correlation between structure and function. In the instant case, the claims are drawn to nucleic acids that may hybridize to the complement of nucleic acids that encode either SEQ ID NO: 6, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 7 or SEQ ID NO: 5. SEQ ID NO: 6 is a fusion protein of a human Her-2 extracellular domain and a human Her-2 phosphorylation domain. SEQ ID NO: 7 is a fusion protein of a human Her-2 extracellular domain and a fragment of a human Her-2 phosphorylation domain. SEQ ID NO: 3 is a human Her-2 extracellular domain. SEQ ID NO: 4 is a human Her-2 phosphorylation domain. SEQ ID NO: 5 is a fragment of a human Her-2 phosphorylation domain. The specification fails to teach the critical features of

these sequences that must be included to make a fusion protein that falls within the scope of the claims. As the claims currently read, the claimed nucleic acids encode fusion proteins that encompass structures that have high similarity to one domain of the fusion protein, fused to, perhaps, only one amino acid from the other domain. The specification lacks a definition of the scope of a Her-2 extracellular domain and also the scope of a Her-2 phosphorylation domain; specifically the specification fails to teach how much of the extracellular or phosphorylation domain may be missing and still be defined as such. Furthermore, the definition of the human and rat extracellular domains and phosphorylation domains is not a definition of all Her-2 extracellular domains or all Her-2 phosphorylation domains.

Applicant has pointed to language in the broad claims that is purported to be "functional characteristics" of the claimed fusion proteins; specifically that the claimed fusion proteins induce an immune response in a warm blooded animal. This functional characteristic is so broad that it may apply to almost any protein. Therefore, the functional language fails to add the requisite disclosure of a correlation between structure and function of the proteins encoded by the claimed nucleic acids.

Because the claims introduce new matter into the specification and because the genus of claimed fusion proteins are not described, it does not appear that applicant was in possession of the claimed inventions at the time application was filed.

5. Claims 93, 97-103, 107-112, 117, 118 and 122 are rejected under 35 U.S.C. 102(e) as being anticipated by Kipps (U.S. Patent 6,287,569; issued Sep. 11, 2001; effective filing date Apr. 10, 1997).

Applicant argues that the claimed polypeptides are not anticipated by Kipps because Kipps' protein is the entire Her-2 protein. However, this argument is not persuasive because the claimed proteins are drawn to fusion proteins consisting of a Her-2/new extracellular domain "linked" to a Her-2/neu phosphorylation domain. This linkage may be by an amino acid linker, such as a intervening sequence of amino acids between the end of the extracellular domain and the beginning of the intracellular domain. Therefore, the rejection is maintained for the reasons of record.

The claimed inventions are drawn to nucleic acids encoding fusion proteins comprising a Her-2/neu extracellular domain fused to a Her-2/neu phosphorylation domain, where the nucleic acid hybridizes under stringent conditions to the complement of a nucleic acid encoding he amino acid sequence of SEQ ID NO: 6 or to SEQ ID NO: 7, and separately to SEQ ID NO: 3 and separately to SEQ ID NO: 4 or to SEQ ID NO: 5. The nucleic acids may comprise sequence that encodes an amino acid linker, may be part of a viral vector, or a composition further comprising a physiologically acceptable carrier or diluent, or further comprising an immunostimulatory substance. The composition may be a vaccine and the nucleic acid may be a DNA molecule.

Kipps discloses a vector comprising a nucleotide sequence encodes a chimeric immunogen that comprises the ErbB-2 (Her-2/neu) tumor antigen (see claim 1; col. 3, line 3 to col. 5, line 10). Kipps also teaches the addition of adjuvants (see col. 7, lines 26-32). Because ErbB-2 comprises the extracellular domain and the phosphorylation domain it reads on a fusion protein with an amino acid linker. Therefore, Kipps teaches nucleic acids and compositions as claimed.

6. The rejection of claims 93, 97, 102, 103, 107, 112, 113, 117, and 118 under 35 U.S.C. 102(e) as being anticipated by Hudziak (U.S. Patent 6,015,567; issued Jan. 18, 2000; effective filing date May 19, 1989; cited in the IDS) is maintained for the reasons of record.

Applicant argues that the claimed polypeptides are not anticipated by Hudziak because Hudziak's protein contains a few amino acids of the transmembrane domain. However, this argument is not persuasive because the claimed proteins are are drawn to fusion proteins consisting of a Her-2/new extracellular domain "linked" to a Her-2/neu phosphorylation domain. This linkage may be by an amino acid linker, such as a few of the amino acids of the transmembrane domain. Therefore, the rejection is maintained for the reasons of record.

Hudziak teaches a nucleic acid encoding a fusion protein that comprises an extracellular domain of a human Her-2 fused to an intracellular portion of a human Her-2, and lacks a transmembrane domain (see Figure 1B, $p185^{HER2\Delta TM}$; col. 3, lines 9-11). Hudziak teaches methods of making fusion proteins. Thus, Hudziak teaches nucleic acids and methods that are the same as that claimed.

7. The rejection of claims 93, 99-101, 103, 109-111, and 125-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kipps (supra) in view of Carrano (U.S. Patent 5,962,428; issued Oct. 5, 1999; effective filing date Sep. 16, 1996) is maintained for the reasons of record. In view of the arguments with regard to Kipps, the rejection is maintained.

The claimed inventions include within their scope nucleic acids that are comprised within vaccine preparations further comprising immunostimulatory substances such as 3D-MPL or QS21, or compositions comprising an oil-in-water emulsions or tocopherol.

Kipps generally teaches vaccine compositions further comprising immunostimulatory substances, but fails to teach specifically such substances as 3D-MPL or QS21, or compositions comprising oil-in-water emulsions or tocopherol. However, Carrano teaches methods for enhancing nucleotide vaccines and teaches MPL, QS21, oil-in-water emulsions and tocopherol (see col. 3, lines 13-28; col. 15, line 55 – col. 16, line 26; col. 19, lines 44-60). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have modified the vaccine compositions of Kipps by adding the adjuvant compositions of Carrano.

8. The rejection of claims 93, 99-101, 103, 109-111, and 130 under 35 U.S.C. 103(a) as being unpatentable over Kipps (supra) in view of Krieg (U.S. Patent 6,429,199; issued Aug. 6, 2002; filing date Nov. 13, 1998) is maintained for the reasons of record. In view of the arguments with regard to Kipps, the rejection is maintained.

The claimed inventions include within their scope nucleic acids that are comprised within vaccine compositions comprising a CpG-containing oligonucleotide.

Kipps generally teaches vaccine compositions further comprising immunostimulatory substances, but fails to teach specifically such substances as a CpG containing oligonucleotide. However, Krieg teaches the benefits of including CpG oligonucleotides in vaccine compositions

and teaches that CpG oligonucleotides are useful for activating dendritic cells (col. 3, line 66 – col. 4, line 14). Thus, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have included CpG containing oligonucleotides in the nucleic acid vaccine compositions of Kipps.

Conclusion

No claim is allowed. Claims 94-96, 104-106, 119, 120, 123 are objected to for depending on rejected claims. Claims 93, 97-103, 107-118, 121, 122, 124-130 are rejected.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Office should be directed to Anne Holleran, Ph.D. whose telephone number is (571) 272-0833. Examiner Holleran can normally be reached Monday through Friday, 9:30 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew, can be reached at (571) 272-0787.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist at telephone number (703) 571-1600.

Anne L. Holleran
Patent Examiner
June 28, 2004

ALANA M. HARRIS, PH.D.
PRIMARY EXAMINER
6/28/2004